

ACHIEVING A COMMON INFORMATION SYSTEM

SAN FRANCISCO DEPARTMENT OF CITY PLANNING • FEBRUARY 1969

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ACHIEVING A COMMON INFORMATION SYSTEM

SAN FRANCISCO DEPARTMENT OF CITY PLANNING, FEBRUARY 1969

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I. INTRODUCTION

A. PURPOSE OF THIS REPORT

This report deals with the need for and the means of achieving an information system for the Department of City Planning. If the city is to improve its system of information for more effective planning and programming, the combined resources of a number of interested city agencies must be utilized. It is the purpose of the report to discuss the findings of a study of informational needs of the Department of City Planning, the resources available and necessary to satisfy these needs, and the best means of achieving the system desired. Our study shows that the informational needs of the Department are found to exceed its informational resources, and for that reason, the report is also concerned with the resources found and the needs expressed by other city agencies. While this is not a feasibility study for the precise design of an information system, our analysis leads to recommendations for a program to achieve what may be called a Common Information System, one which would benefit not only this Department, but other prospective participants in such a system.

B. BACKGROUND

1. The Nature of a Common Information System

The phrase, "common information system", refers to a method by which information may be standardized, stored, kept up to date, and used by several agencies in organized and effective ways. Of especial importance is the word "common", for it implies, in these circumstances, the mutual sharing of informational resources by several uses. It is stressed throughout this report because our studies reveal that the

informational requirements of the Department of City Planning cannot be satisfied with information which it alone generates. Because the Department's responsibilities are comprehensive, involving nearly all aspects of planning and development, the demand for information far exceeds our ability to supply it; consequently, we must import more than we export. Thus, in recognizing our reliance upon other agencies for supplementing our resources, we also recognize that there are benefits for all prospective participants in a common information system which none can enjoy individually. A number of other city agencies were asked both about the resources of information they might wish to contribute and the benefits they might gain from mutual sharing. With minor exceptions, the interest expressed by the agencies in a joint venture has encouraged the proposal of a common information system.

2. Interest in a Common Information System

The sharing of information by public agencies not new. However, the computer enables information of common interest and utility to be shared on a much broader and more efficient basis. Considered as a filing system, the computer is superior to most manual systems because of its enormous capacity for storage in a number of different media, and the speed with which information can be retrieved from its memory. These advantages, however, can only be achieved if certain rigorous criteria are observed.

First, the information to be stored must be standardized and the methods for its storage and extraction precisely specified. Second, it must be accessible to its users. Third, the costs of storage and extraction

must be within the reach of the participating agencies. While manual files often conceal ineffective practices and excessive costs of information collection, storage, and retrieval, the computer in requiring that both practices and costs be made explicit, makes its users far more conscious of these critical factors.

One of the objectives of the Community Renewal Program for San Francisco was the creation of an information system that would permit decisions about renewal actions to be made using the computer as an essential tool. Among the first studies undertaken was a survey of information kept by various City agencies to evaluate its use in the construction of a simulation model. Review of these records soon indicated that they were neither sufficiently comprehensive nor consistent for this purpose. However, this survey of city records did emphasize the need for attention to this neglected area. In 1965, the City began to acquire its first large scale computer. While the first application of this equipment was to the more conventional functions of accounting, it was soon recognized that its capability could be extended to a number of information handling functions as well. In April, 1966, a special subcommittee of the Inter Agency Committee on Urban Renewal was formed to study the creation of a joint information system by sharing the resources of individual agencies. In October, 1966, formal meetings of the subcommittee came to an end. Since that time, data processing projects have been sponsored by several public agencies. Some of these are reviewed in the report. Regardless of the individual efforts pursued to achieve a data processing system, whether as ambitious as that of the Office of the

Assessor or of more limited scope such as this Department's Housing Inventory information, it is clear that an effective system cannot be achieved by a piecemeal approach. The viewpoint of the subcommittee, that the only effective way to achieve a comprehensive and efficient information system is through mutual action, has been further reinforced by experience since 1966.

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II. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

This study has made the following conclusions clear:

1. A common information system in which a number of city departments share their resources for the satisfaction of individual needs is both needed and possible.
2. The need to consider the creation of such a system is immediate; at the present time three major departments--the Assessors, Social Services, and Police--have already invested substantial amounts of time and money in the development of systems to meet their own requirements. Further delay in the development of a common system will complicate an already complex situation. While the development of individual systems may be necessary to meet certain specific requirements, the absence of a common approach is costly and wasteful.
3. Standardization of information classifications, definition, and collection is urgently needed before existing systems are so well founded that compatibility, and consistency of information collected by various departments becomes difficult, if not impossible, to assure.
4. Before any specific proposals for a systems design are made, there must be a joint participation in the process of arriving at the scope of such a system by interested city departments.
5. The task of systems design and operation is large and expensive. This fact, and the willingness of the participants to accept it, is paramount if any serious work on systems design is to proceed.

THE CONSTITUTION

THE CONSTITUTION OF THE UNITED STATES OF AMERICA

1. A power is conferred upon Congress to regulate commerce with foreign nations, to regulate commerce among the several States, and to regulate commerce with the Indian Tribes.

2. The power to coin money, to regulate the value thereof, and to fix the standard of weights and measures, is vested in Congress.

3. Congress shall have the sole and exclusive power to establish an uniform rule of naturalization, to regulate the trade and commerce with the Indian Tribes, and to exercise the power of taxation.

4. Congress shall have the power to borrow money on the credit of the United States, to regulate the value of money, and to fix the standard of weights and measures.

5. Congress shall have the power to regulate the trade and commerce with the Indian Tribes, and to exercise the power of taxation.

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6. It will be desirable to coordinate the construction of an information system with other local systems, either developed or proposed, to the extent consistent with the special interests and objectives of the participating city departments. Participation in a regional information system would be of especial benefit to the Department of City Planning.
7. The construction of a common information system is in keeping with the following recommendation made by the consultants for the Community Renewal Program:

¹"The CRP has developed a wealth of valuable information on all aspects of the City's physical, economic, and social conditions. But the future data base for the CRP must be strengthened through the development of data-processing systems which will permit quick and easy computations of the current condition of properties in the City--whether they are occupied, by whom, and the various market pressures affecting them. A central records office would be desirable either in the Office of the Coordinator of Planning, Housing, and Development or in the Department of City Planning. This office would collect, collate, and disseminate relevant data from City, State, and Federal sources, and serve as a source of comprehensive and continually updated information upon which the Office of the Coordinator of Planning, Housing and Development, the Department of City Planning, and others could base their future programs and policies and test the results of past programs and policies."

Although the information system proposed in this report is broader in scope than that mentioned in the Community Renewal Program report, since it is viewed as an interdepartmental effort rather than a clearing house

¹Final Report to City Planning Commission, San Francisco Community Renewal Program, Arthur D. Little, Inc., October, 1965; p. 161.

1. The first of the three main points is that the Government has failed to provide adequate housing for the people of the country. This is a serious problem which has caused much suffering and hardship. The Government should take immediate steps to address this issue.

2. The second point is that the Government has failed to provide adequate education for the people of the country. This is a serious problem which has caused much suffering and hardship. The Government should take immediate steps to address this issue.

3. The third point is that the Government has failed to provide adequate healthcare for the people of the country. This is a serious problem which has caused much suffering and hardship. The Government should take immediate steps to address this issue.

4. The fourth point is that the Government has failed to provide adequate employment opportunities for the people of the country. This is a serious problem which has caused much suffering and hardship. The Government should take immediate steps to address this issue.

operated by a specific agency, it is obvious that it will in effect accomplish the same purpose. It is premature to locate the administrative center of the system at this stage of analysis, however, this matter will ultimately be resolved when the detailed systems design is accomplished.

8. The costs of development of an information system are difficult to quantify. However, there is every indication, based upon local experience (see Section V of this report) and on the experience of other jurisdictions who have undertaken such development, that the expense of a fully developed system, supplying the informational requirements of all of the participants in a satisfactory manner, may amount to millions of dollars. This, even given the anticipated saving of time through the elimination of duplication and standardization of procedures, is a heavy burden for the community to bear. Since such a system is certainly in line with the proposals for the Community Renewal Program and since it must be considered a sustaining element of that program, one which will keep it current, and since a number of other municipalities have developed systems with substantial assistance for their work from the Federal Government, it is concluded that once agreement has been reached between the various agencies desiring to participate, a request for assistance from the Department of Housing and Urban Development or whatever relevant Federal Agency be made.

B. RECOMMENDATIONS

1. If the conclusions of this report meet with the approval of the agencies who seek involvement in the development of a common information system, it is recommended that a strong joint committee be formed (see Section C) to study and make recommendations for its design and effectuation. Unless this first and most important step is taken, there will be no firm ground for the expenditure of time and money systems development will require. A piecemeal approach to the development of a common information system will ultimately prove more costly and less beneficial than a unified effort to solve a common problem.
2. It is recommended that the Office of the Mayor and the Board of Supervisors give their endorsement to this project. If the project proves feasible in the opinion of the participating departments, the informational resource it is capable of providing will be of great value in the formulation and effectuation of programs and policies having profound impact on the development of this city. It is therefore of great interest to the community as well as to the government of the city to see a common information system developed.
3. Given the expenditure of time and funds necessary to design and effect such a system, it is strongly recommended that every avenue for subsidizing this effort through federal grants be explored. One such possible avenue is a Community Renewal Program grant.

1. The Commission of the European Communities (CEC) is the central body of the Community. It is responsible for the implementation of the Community's policies and for the management of the Community's budget. The Commission is composed of representatives of the Member States, who are appointed by the Council of Ministers. The Commission's work is carried out in a number of departments, each headed by a Commissioner. The Commission's main tasks are to ensure the proper functioning of the Community, to propose and implement Community policies, and to manage the Community's budget. The Commission also has the power to bring Member States to court if they fail to comply with Community law.

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C. STEPS TO BE TAKEN IN THE ACHIEVEMENT OF A COMMON INFORMATION SYSTEM

The achievement of a common information system requires the services of representatives from those departments who have expressed interest in its development. Before any specific systems design can begin, a number of the problems outlined in this report must be resolved.

STEP I. A strong committee consisting of representatives of the City Departments who have shown an interest in the development of a Common Information system must be formed.

The membership of this committee would include, at minimum, representatives of the: Office of the Assessor; Department of Public Works; Department of Public Health; and the Department of City Planning; and the Electronic Data Processing Division. Other city departments expressing a strong interest in participation in such a system would also be included. The above departments have been chosen because they are the most immediately concerned with collecting and sharing information about the physical aspect of the city, which is the most readily implemented part of the system and the one of obvious and immediate need. The agenda of this committee would include items such as the identification in detail of common information needs and resources, covered in part in the Appendix to this report, the joint responsibilities for participating in the development and maintenance of an information system, and the standardization of information to be included in such a system. Agreement upon these items will then make it possible to proceed to the next step.

STEP 2. Specification of the system to be developed.

When agreement has been reached between members of the Committee, a report on the scope of the proposed system should be prepared which will specify in detail the kind of system desired, the items to be included in such a system, the degree of participation by each department in the development of the system and in its operation, and the special requirements and abilities of each of the participants.

STEP 3. Determining the most appropriate means of designing the system.

The task of designing a system that will suit the requirements of the participants is a large one. It may require the services of a consultant if city staff are not available for the job. A review of the proposal prepared in Step 3 will determine how best to accomplish systems design, and the cost of the project.

STEP 4. Designing the system.

Judging from available experience, the careful design of an information system will require time, money, and effort. Even if large sums of money are readily obtainable, there will have to be active participation by key staff members in the preparation for system design. Most of the initial and continuing work will be expended in the preparation of information to be included in the system. The establishment of procedures for

THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. It begins with the first settlers who came to the continent in search of a new life. They found a land of vast resources and a people who were different from them. Over the years, the United States has grown from a small colony to a great nation. It has fought wars, made mistakes, and achieved great things. The story of the United States is a story of the human spirit and the power of dreams.

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maintaining and operating the system will also be exacting and time-consuming. The people who plan to use the system must play an active role in its development and maintenance. Their first-hand experience with the kinds of information to be included in the system with the procedures for its collection, editing, and maintenance is the most valuable resource which can be offered. It is essential that the users be thoroughly familiar with the operation of the system and that the system be well documented if it is to function at its best capability. Once definite responsibilities for participation in the system have been established, they must be rigorously held to by the participants. All of the participants must be prepared to allocate considerable staff time at all levels for this aspect of the operations. If it is determined appropriate to hire consulting help for the design of the system, the role of the consultant should be that of expert advisor, rather than complete developer of the system.

STEP 5: Exploration of funding for the project.

As noted in the conclusions of this report, the development of a comprehensive, operational information system may require resources which exceed the immediate fiscal capability of the city. It is strongly suggested that routes for subsidizing the development of the system be explored. One such logical route, given previous experience with the Community Renewal Program and considering the means that other communities such as Oakland

have employed, is to request funds from the Federal Government as a part of a new Community Renewal Program grant. The aim of this second grant for Community Renewal Program study would be to put into effect a number of the worthwhile recommendations made in the earlier study in greater measure than has been possible since the end of that work.

III. INFORMATION NEEDS AND RESOURCES OF THE DEPARTMENT OF CITY PLANNING

A. NEEDS

A survey was made of the Department of City Planning in order to identify its information needs and the applications of a common information system. Those items for which a need could be demonstrated are considered for inclusion in any proposed system. A list of the specific items are included in Appendix Part II, together with a glossary defining the meaning of the listed items. The principal divisions of the Department and their specific needs are identified in the list.

A number of the items are considered necessary by more than one of the divisions, and this is regarded as a criteria of the general usefulness of, and hence the need to include, a specific item of information in a common system.

It was concluded that the basic unit of information collection most useful to all was the individual parcel or lot. Most of the information relating to the physical nature of the city is or can be collected on this basis. There is general consensus among most agencies that it should serve as the basic unit for any proposed system. If larger areas of study are desired, the information collected on the individual lots can be summed for any given number included within the area. The computer makes such a summation a relatively simple operation. Social information, describing people and their activities is only partially available on the parcel basis. Indeed, the maintenance of privacy of the individual presupposes that very little

information would or should be available on as specific a basis as is the information about buildings. However, this kind of information, generally available only through surveys, could be collected on the basis of the Census Tract. This unit is generally small enough to be meaningful in terms of planning analysis, yet large enough to avoid the problems of disclosure. It is also the traditional informational unit for social analysis since the Bureau of Census has, for the most part, been the single agency which provides most information about the inhabitants of the community.

In addition to the survey of items which may be of interest to the Department, the uses to which a system might be put were also studied. While often making use of the same items of information, there is a considerable difference in the manner to which the two basic functions of the Department--preparation of plans and implementation of plans--would use information.

B. RESOURCES

The resources of information considered in this report as specific to the Department are those which originate in it. The principal sources of original information in the Department are to be found in Zoning Administration, the Land Use Survey, and the Housing Inventory file.

1. Zoning Administration

Zoning Administration provides much of the information which is unique to the Department of City Planning. The copy of the Assessor's Block Books form the basic resource. These are

bound volumes of sheets, each containing a map of a city block which shows lot lines, dimensions, and bordering streets. The boundaries of zoning classifications have been entered as well as the zone changes, variances, and appeals which apply to particular lots. Separate sets of block books are maintained for the old (pre-1960) and the new (1960 and after) zoning ordinances.

For more detailed information about a particular lot it is necessary to consult the case files. Separate files are maintained for rezoning, variance, conditional use, building permit, and enforcement cases. The files include maps, copies of correspondence, resolutions, etc., and are organized by case number (the appropriate case number is found by looking in the block book). Researching a particular lot frequently involves sorting through all of these files.

If the lot has a nonconforming use all of the information about it can usually be found in the nonconforming use survey file. This file contains data on the 4,000 nonconforming uses under the new zoning ordinance. It includes building history and lot area as well as land use.

Another file is maintained on all garment shops within the special garment shop district. This garment industry file contains data on the number of machines and employees in all of the shops.

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The Zoning Division also has the Sanborn Atlas Books that are bound volumes, each page of which shows about four city blocks with lot lines, approximate structure shapes, construction type, height, number of stores, number of dwelling units, and type of activity. The data are collected in annual field surveys made by the Sanborn Map Company, and are checked by the Zoning Division in the field before they are used. The Zoning Division also has land use maps made in 1940 and 1955.

2. Land Use Survey

For a number of years, the Department has conducted land use surveys of the city. Diagrams of each city block indicate parcel outlines and the uses located on each according to a generalized classification system. While this system is fairly explicit for residential uses, non-residential uses are not well categorized for contemporary planning studies. The survey depends upon a visual inspection of the lot, but often does not reach the interior use of the structure. While useful, this survey might be superseded by an effective information system making use of other city records which contain more detailed information about the structure and the activities occurring within it. Surveys are available for the years 1937, 1947, 1956-9, and 1961-4. The basic information, recorded on block diagrams, is used to prepare maps from which approximations of area are derived and these in turn are recorded by block, old planning area, and Census Tract.

3. Housing Inventory File

The information used in these files comes from a program of research by the staff in cooperation with the Department of Public Works. Data

on new construction, alterations affecting the number of units in a structure, and demolitions removing buildings from the housing supply are recorded on forms which are subsequently used for keypunching, converting the information into a medium compatible with data processing equipment. These records are maintained on a parcel basis, and the information is used to determine the changes in the inventory of housing stock for the city. If a common information system were available, it would not be necessary for the Department to maintain a separate research program to gather this information. Furthermore, standardization and control of the information collected about housing would permit a more complete and accurate description of the stock than is now possible.

The survey of Departmental information resources reveals that the information unique to the Department is that which is generated by the Administration of the Zoning Ordinance. More effective land use records, for example, could be maintained through use of agency records dealing with structures and their uses than through the visual survey technique. As mentioned above, the research necessary to maintain the housing inventory could be eliminated if the information gathered were available through a common system. Information used by the Department, as shown in Appendixes A and B considerably exceeds that which is generated by it. Of the nearly hundred items considered desirable for inclusion in a common information system by the staff of the Department, only thirteen originate as a result of its operations, and these thirteen are almost exclusively the result of the administration of the Zoning Ordinance.

The research project in the planning office of the future will be more concerned with how to use the data than with its collection and basic tabulation. If one of the principal advantages of a computer-oriented information system is the elimination of a good deal of tedious and unnecessary work by professional staff who would be better employed in drawing inferences and outlining policies, a no less important advantage results from the accessibility and the timeliness of information available in such a system. In a well designed system, continual review and bringing information up to date will occur, thus assuring its timeliness for the user. The information contained in such a system will have been standardized in such a manner that it will not differ in definition or collection and thus its reliability and consistency will be assured.

Presently there is need for a common information system both for general studies and projection for the city as a whole, and for specific area analyses and plans. The projections for the recent population study could have been a one week, rather than a two-month, task had an information system containing data on the birth and mortality rates for the city been available. For the Chinatown and other studies, the accessibility of information would have enabled more field work to be done, and the manipulation of data reduced so that more time could be spent on its analysis.

2. Capital Improvement Program

The exploration of electronic data processing to assist in the accounting and review function of the Capital Improvement Program is already under investigation. Records dealing with the ownership and value of properties, with the character of the areas surrounding a proposed public facility, with cost experience and other factors which might be stored in the system could have immediate and important bearing on capital improvement programming.

3. Zoning Administration

The application of a system to Zoning Administration differs markedly from the preceding applications. Zoning inquiries are usually directed at specific parcels rather than areas. Thus, for zoning administration purposes, a common information system is more oriented to retrieval of a complete information file for a specific parcel than for the collection and tabulation of information on larger areas. Several specific applications are described below.

- a. Zoning Inquiries. The Zoning Counter requires a wide range of information about each lot in order to answer questions as to what the Zoning Ordinance allows on a particular lot. The block books presently form the basic resource for answering these questions. Since it is useful to show the appropriate block map to a person inquiring about a property, the block books would not be replaced by the initiation of the proposed information system. However, such a system would be helpful in zoning inquiries when more information is needed than is contained in

the block books. This currently involves research in several files. These files would be consolidated in the computer system and the information could be made available in one of two ways: (1) a print-out of all data relevant to zoning indexed by lot and block number; (2) a remote terminal which would provide immediate access to all data stored in the computer. If the computer were also programmed to contain all the zoning specifications the terminal could be used to ascertain what is allowed on a particular lot as well as what its characteristics are.

- b. Permit Checking. All applications for new construction, alteration and sign permits have to be checked by the Zoning Division. In the first two instances the building plans must be studied to see if they conform to the Zoning Ordinance. If the zoning requirements were included in the information system the computer could automatically do the calculations necessary to determine whether the plans conform. The process of permit checking also generates data about floor area, dwelling units, etc., which are not presently in a form easily used for analysis but which would be under the proposed system.
- c. Zoning Case Reports. As part of the process of evaluating an application for rezoning, a conditional use, or a variance, the Zoning Division must prepare a report for the Commission on the characteristics of the lot and of the neighborhood in which it is located. The applicant supplies a map showing all lots within

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300 feet and a list of their owners. The Zoning Division then checks this map and enters the land use of each lot using the data contained in the Sanborn Atlas. The land use data are then checked in a field survey. In addition, the list of owners must be checked and letters sent to each of them. The computer system would simplify this process since it could provide all of the characteristics of lots within 300 feet (including picking out which lots are involved) and type up the letters of notification to the owners.

IV. OTHER CITY AGENCIES

A. INTRODUCTION

One of the most important aspects of this report is a recapitulation of a survey of the informational needs and resources of a number of city departments and their interest in a common system. In the Appendix, a table has been prepared to summarize the items of information desired and those available from each of the interviewed departments. The following discussion is concerned with the interest of the various agencies contacted in a common information system.

The goal of participation can only be achieved if each of the participants can benefit from the system. In the survey of interest by various departments, we have asked what specific benefit they might derive from the operation of a system and their desire to participate in the creation of such a system. Since the survey was informal the expressions noted in the following section are not official policy but often reflect strongly held views. The survey does not pretend to be as detailed or as specific as a formal systems analysis would require. However, from what has been gained it is clear that there is strong desire on the part of a number of responsible agency staff members for some kind of automated information sharing process that would improve access to information and reduce the costs of collecting and maintaining it.

B. SURVEY OF INTEREST IN A COMMON INFORMATION SYSTEM

Assessor's Office. The Office of the Assessor is already using computer facilities to meet some of its informational needs and is in the process of expanding the system to include some items now on paper. The Assessor is

T A B L E I

RESPONSE TO A COMMON INFORMATION SYSTEM PROPOSAL

| | <u>Highly Interested</u> | <u>Fairly Interested</u> | <u>Somewhat Interested</u> | <u>Might Be Interested In The Future</u> | <u>Not Interested</u> |
|---------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------------------------|---------------------------|
| Assessor | X | | | | |
| Board of Education | | | | | X ¹ |
| Board of Permit Appeals | X | | | | |
| Disaster Corps | X | | | | |
| Econ. Opportunity Council | X | | | | |
| Finance and Records | | | X | | |
| Fire Department | X | | | | |
| Health Department | | | | | |
| Community Mental Health | X | | | | |
| Environmental | | | X | | |
| Records and Statistics | | X | | | |
| Housing Authority | | X | | | |
| Human Rights Commission | X | | | | |
| Library | X | | | | |
| Park and Recreation | | | X | | |
| Parking Authority | X | | | | |
| Police Department | X | | | | |
| Public Util. Commission | X | | | | |
| Municipal Railway | | | | | X |
| Water Department | | | X | | |
| Public Works | | | | | |
| Bureau of Building Insp. | X | | | | |
| Traffic Engineering | | X | | | |
| Real Estate Department | X | | | | |
| Redevelopment Agency | X | | | | |
| Retirement Board | | | | X | |
| Social Services | X | | | | |

¹Willing to cooperate with data exchange.

1. GENERAL INFORMATION

| No. | Name | Address | City | State |
|-----|--------------------|------------------|-----------------|-------|
| 1 | John Doe | 123 Main St | New York | NY |
| 2 | Jane Smith | 456 Elm St | Los Angeles | CA |
| 3 | Robert Johnson | 789 Oak St | Chicago | IL |
| 4 | Mary White | 101 Pine St | San Francisco | CA |
| 5 | James Brown | 202 Cedar St | Philadelphia | PA |
| 6 | Sarah Green | 303 Birch St | San Diego | CA |
| 7 | Michael Black | 404 Spruce St | Seattle | WA |
| 8 | Linda Gray | 505 Willow St | Portland | OR |
| 9 | David King | 606 Ash St | Denver | CO |
| 10 | Patricia Lee | 707 Hickory St | Phoenix | AZ |
| 11 | Christopher Hall | 808 Maple St | San Jose | CA |
| 12 | Elizabeth Scott | 909 Walnut St | San Antonio | TX |
| 13 | William Adams | 1010 Chestnut St | Fort Worth | TX |
| 14 | Karen Baker | 1111 Elm St | Dallas | TX |
| 15 | Thomas Wilson | 1212 Oak St | Austin | TX |
| 16 | Jessica Moore | 1313 Pine St | San Marcos | CA |
| 17 | Benjamin Taylor | 1414 Cedar St | San Luis Obispo | CA |
| 18 | Rebecca Evans | 1515 Birch St | Stockton | CA |
| 19 | Gregory Hill | 1616 Spruce St | Modesto | CA |
| 20 | Stephanie Young | 1717 Willow St | Merced | CA |
| 21 | Jonathan King | 1818 Ash St | Yuba City | TX |
| 22 | Michelle Lee | 1919 Hickory St | Visalia | CA |
| 23 | Kevin Scott | 2020 Maple St | Hanford | CA |
| 24 | Angela Hall | 2121 Walnut St | Corcoran | CA |
| 25 | Brandon Adams | 2222 Chestnut St | Wasco | CA |
| 26 | Christina Baker | 2323 Elm St | Arvin | CA |
| 27 | Timothy Wilson | 2424 Oak St | Reedley | CA |
| 28 | Heather Moore | 2525 Pine St | Delano | CA |
| 29 | Christopher Taylor | 2626 Cedar St | Shafter | CA |
| 30 | Kimberly Evans | 2727 Birch St | Coalinga | CA |
| 31 | Matthew Hill | 2828 Spruce St | Vallejo | CA |
| 32 | Olivia Young | 2929 Willow St | Tracy | CA |
| 33 | Isaac King | 3030 Ash St | Merced | CA |
| 34 | Grace Lee | 3131 Hickory St | Stockton | CA |
| 35 | Samuel Scott | 3232 Maple St | Modesto | CA |
| 36 | Chloe Hall | 3333 Walnut St | Merced | CA |
| 37 | Benjamin Adams | 3434 Chestnut St | Yuba City | TX |
| 38 | Victoria Baker | 3535 Elm St | Visalia | CA |
| 39 | William Wilson | 3636 Oak St | Hanford | CA |
| 40 | Madeline Moore | 3737 Pine St | Corcoran | CA |
| 41 | Joseph Taylor | 3838 Cedar St | Wasco | CA |
| 42 | Abigail Evans | 3939 Birch St | Arvin | CA |
| 43 | Robert Hill | 4040 Spruce St | Reedley | CA |
| 44 | Emily Young | 4141 Willow St | Delano | CA |
| 45 | David King | 4242 Ash St | Shafter | CA |
| 46 | Sophia Lee | 4343 Hickory St | Coalinga | CA |
| 47 | Christopher Scott | 4444 Maple St | Vallejo | CA |
| 48 | Olivia Hall | 4545 Walnut St | Tracy | CA |
| 49 | Benjamin Adams | 4646 Chestnut St | Merced | CA |
| 50 | Chloe Baker | 4747 Elm St | Stockton | CA |

interested in the proposed unified system since it would enhance cooperation with other city departments, especially those who would contribute and update the information they generate. Much of the information in the computerized and operational files of the Office of the Assessor are available for use by other departments.

Department of Public Works. The Central Permit and Building Inspection Bureaus of the Department of Public Works are extremely interested in the proposed system and are willing to cooperate in the effort to implement it. They would be major contributors to and users of the system. Building Inspection has an immediate need for property information maintained by other departments. It also generates data as a result of its building inspection function. The Central Permit Bureau generates data as a result of the building, alteration, conversion, and demolition permits it issues and their records date back to 1906.

Health Department. The Health Department's Bureau of Records and Statistics is very interested in the proposed system. They are responsible for maintaining birth, death, and morbidity statistics by health district, nursing district, and census tract which are keypunched and tabulated by the Electronic Data Processing unit in City Hall. They would be willing to provide a duplicate deck of yearly birth and death record cards for use in the proposed system; in turn, they would like to get any available non-census year demographic data.

The Bureau of Environmental Health, while interested in this study, does not have any immediate need for the data to be included in it. They are willing to make available copies of the permits they issue (for laundries, laundrettes, fumigators, private ambulances, stables, and kennels).

The Community Mental Health Services Division is very interested in an information system as a potential user. They require certain demographic and social data. Their internal records are maintained and tabulated by the Survey Research Center in Berkeley with whom they contract on a yearly basis.

Fire Department. The Fire Department is enthusiastic about and interested in the proposed information system and are willing to help initiate the proposal and to support it. They would primarily be users of the system, but would want to include their historical fire fighting and inspection records. The Fire Department is thinking in terms of an immediate access system since they would like to have data available to them at any time of the day or night.

Real Estate Department. This department is extremely interested in the proposed system and will support the formal proposal. It has the responsibility for the acquisition and the sale of city property, for the leasing of city buildings, and for the appraising of buildings for FACE program loans. The data they collect are limited to the appraisal of individual properties. However, they could use background data to help in the appraising process such as the listings of sales occurring in the city and of the characteristics of the properties sold.

Other Potential Data Users. The Redevelopment Agency is interested in the proposed system primarily as a potential user. It would be able to provide data on the lots in redevelopment areas and on the people who reside or work in these areas.

The Housing Authority is also interested, primarily as a potential user. It will be able to contribute some data on the location and characteristics of the city's public housing and on the characteristics of the people living in public housing.

The Board of Permit Appeals uses data which are collected and recorded by other city departments since it generates no data itself. They are very interested in the proposed system and are willing to cooperate in getting it started since they are dependent upon such a variety of sources in order to meet their data needs.

The Economic Opportunity Council, the Human Rights Commission, the Recreation and Park Department, the Parking Authority, the Public Utilities Commission, and the Library are additional potential users. The latter sees some possibilities in using it as an aid in library planning. The Municipal Railway might also use the system as an aid in planning.

Police Department. A computerized information system specifically for law enforcement purposes is currently being designed for the Police Department. It will include several data items relevant to the information system being discussed in this report. The Police collect general land use data by street address along with the owner's name, address, and telephone number so that they know who to contact in case of an emergency. This information is kept current by the patrolmen and could be made available to other departments. The Police Department is going to design a geographic coordinate system; contact should be maintained with the department so that a system is developed which can be used in the proposed unified information system.

Other Potential Data Sources. The Board of Education is not interested in the information system being proposed since it does not require data other than what it generates itself. However, the Board does have information which would be useful and which it is willing to supply. These data are a prerequisite to making population estimates and to doing migration studies. However, a great deal of work would be required if the data are to be put in a usable form.

The Social Service Department already uses the computer to store data. They would be able to contribute data of rent paid by families receiving Aid to Dependent Children. In turn, they would like to have access to some of the data to be included in the proposed system.

The Department of Finance and Records also maintains data in computer form. Only parts of the records contain data required by other city departments.

The Water Department does have some historical data which might be of value to an information systems. It needs data about conversions and demolitions; while this information could be obtained from the proposed system it might more efficiently be obtained directly from the Department of Public Works files.

State Department of Employment. This agency collects data needed by several city departments. They are interested in the proposed system and are willing to contribute their data and their experience in the analysis of employment data.

They record employment data on tape for each quarter of the year. The tapes include all establishments covered by California Unemployment Insurance. The establishments are classified according to the Standard Industrial Classification and the census tract in which they are located. Each establishment record includes the name, address, and the number of employees. Although Federal and State employees are not covered by unemployment insurance, information is available as to the number of persons employed by each agency and the agency location. A listing of seasonal employment variations by Standard Industrial Classification is also prepared on a regular basis. A list of establishments which have gone out of business or have moved can be obtained from Sacramento for any time interval desired.

V. ACHIEVEMENT OF A COMMON INFORMATION SYSTEM

A. THE NEED FOR A COMMON INFORMATION SYSTEM

The study of the informational needs of the Department of City Planning and of other city departments, of the resources for meeting those needs, and of the interest in sharing and further developing those resources points to a Common Information System as the best means for satisfying mutual requirements. A number of city departments already spend, or have budgeted money for data processing services. According to the figures in the accompanying table, nearly \$2.5 million were budgeted for such services by City Departments interviewed in our survey for the fiscal year of 1968-69. The Assessor, the Police Department, and the Department of Social Services, who account for more than half of this total, are directing their principal expenditures toward the development and implementation of information systems for their own use. The Assessor has spent over \$800,000 in the past three years on a property information system, and the Department of Social Services anticipates spending over \$1 million which will give them a comprehensive system suited to their needs.

The development of individual systems to meet the requirements of particular departments would probably be necessary, even if the common system here proposed is adopted, for a common system cannot contain all of the information that any individual participant may desire. However, the general activity in systems design and implementation by various departments pursuing their own independent course of action is symptomatic of both a need for the advantages of an electronic data processing system and of the possible difficulties which independent systems design may pose.

Vol. 41, No. 1, January 1, 1929

The American Medical Association is a national organization of physicians and surgeons, organized for the purpose of promoting the interests of the medical profession and the public. It is a non-profit corporation, organized under the laws of the United States, and is the largest and most influential of the medical organizations in this country. Its membership is composed of physicians and surgeons, and its principal office is located in Chicago, Illinois. The Association is organized into various departments, including the Department of Education, the Department of Legislation, the Department of Public Health, and the Department of International Relations. It also maintains a number of journals and publications, and it is active in the promotion of medical research and the improvement of medical education.

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T A B L E I I

DEPARTMENTS INTERVIEWED - EDP BUDGETS FOR 1968 - 69

| | <u>Budget for City Hall EDP Work</u> | <u>Budget for EDP Outside City Hall</u> |
|--------------------------------|------------------------------------------|---------------------------------------------|
| Assessor | \$ 456,573 | - |
| Board of Education | - | \$ 140,000 |
| Board of Permit Appeals | - | - |
| City Planning Department | 1,000 | - |
| Disaster Corps | - | 106,000 ³ |
| Economic Opportunity Council | - | 10,000 |
| Finance and Records | 51,616 ¹ | - |
| Fire Department | - | - |
| Health Department | 477,900 | 2,400 |
| Housing Authority | - | - |
| Human Rights Commission | - | - |
| Library | 50,000 | - |
| Recreation and Park Department | - | - |
| Parking Authority | - | - |
| Police Department | 375,000 | - |
| Public Utilities Commission | - | - |
| Municipal Railway | - | - |
| Water Department | - | 300,000 ² |
| Public Works Department | 15,000 | - |
| Real Estate Department | - | - |
| Redevelopment Agency | - | 30,000 |
| Retirement Board | - | - |
| Social Services | 406,996 | - |
| | <hr/> | <hr/> |
| | \$ 1,834,085 | \$ 588,400 |
| | 588,400 | |
| TOTAL | \$ 2,422,485 | |

¹ Does not include the Tax Collectors Budget for the Business Tax Ordinance Records.

² Does not include salaries for EDP staff.

³ For the Four County Community Shelter Program.

Source: Interviews

| | | | |
|-----|------|------|------|
| 1 | 1891 | 1891 | 1891 |
| 2 | 1892 | 1892 | 1892 |
| 3 | 1893 | 1893 | 1893 |
| 4 | 1894 | 1894 | 1894 |
| 5 | 1895 | 1895 | 1895 |
| 6 | 1896 | 1896 | 1896 |
| 7 | 1897 | 1897 | 1897 |
| 8 | 1898 | 1898 | 1898 |
| 9 | 1899 | 1899 | 1899 |
| 10 | 1900 | 1900 | 1900 |
| 11 | 1901 | 1901 | 1901 |
| 12 | 1902 | 1902 | 1902 |
| 13 | 1903 | 1903 | 1903 |
| 14 | 1904 | 1904 | 1904 |
| 15 | 1905 | 1905 | 1905 |
| 16 | 1906 | 1906 | 1906 |
| 17 | 1907 | 1907 | 1907 |
| 18 | 1908 | 1908 | 1908 |
| 19 | 1909 | 1909 | 1909 |
| 20 | 1910 | 1910 | 1910 |
| 21 | 1911 | 1911 | 1911 |
| 22 | 1912 | 1912 | 1912 |
| 23 | 1913 | 1913 | 1913 |
| 24 | 1914 | 1914 | 1914 |
| 25 | 1915 | 1915 | 1915 |
| 26 | 1916 | 1916 | 1916 |
| 27 | 1917 | 1917 | 1917 |
| 28 | 1918 | 1918 | 1918 |
| 29 | 1919 | 1919 | 1919 |
| 30 | 1920 | 1920 | 1920 |
| 31 | 1921 | 1921 | 1921 |
| 32 | 1922 | 1922 | 1922 |
| 33 | 1923 | 1923 | 1923 |
| 34 | 1924 | 1924 | 1924 |
| 35 | 1925 | 1925 | 1925 |
| 36 | 1926 | 1926 | 1926 |
| 37 | 1927 | 1927 | 1927 |
| 38 | 1928 | 1928 | 1928 |
| 39 | 1929 | 1929 | 1929 |
| 40 | 1930 | 1930 | 1930 |
| 41 | 1931 | 1931 | 1931 |
| 42 | 1932 | 1932 | 1932 |
| 43 | 1933 | 1933 | 1933 |
| 44 | 1934 | 1934 | 1934 |
| 45 | 1935 | 1935 | 1935 |
| 46 | 1936 | 1936 | 1936 |
| 47 | 1937 | 1937 | 1937 |
| 48 | 1938 | 1938 | 1938 |
| 49 | 1939 | 1939 | 1939 |
| 50 | 1940 | 1940 | 1940 |
| 51 | 1941 | 1941 | 1941 |
| 52 | 1942 | 1942 | 1942 |
| 53 | 1943 | 1943 | 1943 |
| 54 | 1944 | 1944 | 1944 |
| 55 | 1945 | 1945 | 1945 |
| 56 | 1946 | 1946 | 1946 |
| 57 | 1947 | 1947 | 1947 |
| 58 | 1948 | 1948 | 1948 |
| 59 | 1949 | 1949 | 1949 |
| 60 | 1950 | 1950 | 1950 |
| 61 | 1951 | 1951 | 1951 |
| 62 | 1952 | 1952 | 1952 |
| 63 | 1953 | 1953 | 1953 |
| 64 | 1954 | 1954 | 1954 |
| 65 | 1955 | 1955 | 1955 |
| 66 | 1956 | 1956 | 1956 |
| 67 | 1957 | 1957 | 1957 |
| 68 | 1958 | 1958 | 1958 |
| 69 | 1959 | 1959 | 1959 |
| 70 | 1960 | 1960 | 1960 |
| 71 | 1961 | 1961 | 1961 |
| 72 | 1962 | 1962 | 1962 |
| 73 | 1963 | 1963 | 1963 |
| 74 | 1964 | 1964 | 1964 |
| 75 | 1965 | 1965 | 1965 |
| 76 | 1966 | 1966 | 1966 |
| 77 | 1967 | 1967 | 1967 |
| 78 | 1968 | 1968 | 1968 |
| 79 | 1969 | 1969 | 1969 |
| 80 | 1970 | 1970 | 1970 |
| 81 | 1971 | 1971 | 1971 |
| 82 | 1972 | 1972 | 1972 |
| 83 | 1973 | 1973 | 1973 |
| 84 | 1974 | 1974 | 1974 |
| 85 | 1975 | 1975 | 1975 |
| 86 | 1976 | 1976 | 1976 |
| 87 | 1977 | 1977 | 1977 |
| 88 | 1978 | 1978 | 1978 |
| 89 | 1979 | 1979 | 1979 |
| 90 | 1980 | 1980 | 1980 |
| 91 | 1981 | 1981 | 1981 |
| 92 | 1982 | 1982 | 1982 |
| 93 | 1983 | 1983 | 1983 |
| 94 | 1984 | 1984 | 1984 |
| 95 | 1985 | 1985 | 1985 |
| 96 | 1986 | 1986 | 1986 |
| 97 | 1987 | 1987 | 1987 |
| 98 | 1988 | 1988 | 1988 |
| 99 | 1989 | 1989 | 1989 |
| 100 | 1990 | 1990 | 1990 |

THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
100 N. 5TH ST. NEW YORK, N.Y.

If there is to be a comprehensive and consistent system developed which will serve the many needs for information upon which this study has touched, and needs which cannot now be anticipated, it is time to suggest that very careful consideration be given to the development of an information system as a whole rather than in independent units which may not be reconcilable. In the long run, such a systems development would probably not only serve mutual interests better, but be less expensive to develop. The urgency of this proposal is great because there is a growing impatience to develop individual systems based on real needs for services that information systems can render.

B. PROBLEMS IN THE DEVELOPMENT OF A COMMON INFORMATION SYSTEM

While this report is not a feasibility analysis of the design of an information system, it is appropriate here to point out some of the basic problems that must be resolved if a system is to be successfully developed.

1. Interagency Participation and Coordination

In order to be effective, there must be a willingness on the part of all agencies having information vital for the system to participate in its formulation and operation. This will impose upon those interested in the system a responsibility to see that it functions usefully for all of its members. To achieve this, there must be a formal means for co-ordination of the effort needed to make the system a reality.

2. Adoption of a Standard System of Definitions and Classification of Information

Consistency of terminology and classification is a prime requirement of a useful data system. An item of information must have a uniform meaning, regardless of the agency or agencies involved in its

collection. Similarly, the basic unit upon which the information is collected must be commonly agreed upon. All systems of classification of materials must be uniform throughout the system, for the system to be mutually useful. The introduction of consistency throughout the starting point for systems design. Agreement upon terms and upon the kind of information to be collected will probably require the greatest expenditure of time in the design of an effective common information system.

3. Establishment of a Comprehensive System of Information, Collection, Storage, Maintenance, and Quality Control

If a common information system is established, the procedures by which information is collected, stored, and maintained by the participating members will have to be carefully reviewed. In addition to establishing consistency of the information collected, one of the important functions of such study is the rationalization of collection procedures to eliminate duplicate collection of information and control of its quality. While wasted effort is desirably eliminated in the operation of the system, the quality of the information collected must not be compromised. Further, procedures for making sure the data is timely must be established and adhered to.

4. Access to the Information

Of prime importance to those who will rely upon a common information system is access to it. Certain information may be withheld from joint use because it is confidential and disclosure forbidden. However, the more important issue from the point of the user is how quickly he is

able to obtain the information he needs from the system. In this respect, there may be considerable variation in priorities: some users will want virtually immediate retrieval, while others will be able to submit their requests and wait a reasonable length of time for satisfaction. However, the system must be capable of improving upon the quantity, quality, and time required for information gathering that they enjoy from being independent of the system if they are to be attracted to it. Much care must be used in the development of retrieval programs and the ability of producing programs to customer specifications must be stressed. Liaison between the user of information and the vendor must be such that frustration and delay are kept to a minimum in the servicing of requests. Priorities must be established that are reasonable and agreed upon by all of the users. Equipment for retrieval of information should be fitted to the individual requirements of the users. No participant in the system should be slighted, even though his share of the system may not be as great as another.

5. Equitable Distribution of Costs

While a common information system may reduce costs in some areas, its most important feature consists of making standard information available to a variety of users who share in it. This aspect is stressed above cost saving, for the implementation of such a system is usually quite expensive. The design of the system, the collection, classification and editing of the information to be stored in it, maintenance of the system, and retrieval of information are all explicit costs.

Because a computer system is an "active" means of storing and retrieving information, that is, money is required to place information in storage, maintain it, and retrieve it, as opposed to the "passive" nature of most conventional filing systems, whose inert nature conceals their true costs which consist of information lost or misplaced and of manhours not directly attributed to this cause spent in attempting to locate material, every step in processing is an explicitly attributable cost. As noted above, the sums required to develop a common information system which will make use of the computer are very large. In fact, even the specification of the cost of systems design is not possible until some agreement has been reached on the scope of the system, both in terms of the number of agencies participating and the length of the files to be stored.

There must be agreement among the agencies upon sharing the costs of both design of the system and its operation. This will involve payment for collection and storage of information as well as payment for services. No single partner in the system should be expected to shoulder a major share of the costs of its operation.

C. REGIONAL COORDINATION

This report has been concerned with the desirability of a system that will organize the information resources to meet the needs common to agencies in San Francisco government. At the same time, it is important to note the implications of concurrent information systems development in the Bay Area.

Locally, the San Francisco Chamber of Commerce is undertaking the development of a non-profit Community Data Bank service, whose objective will be the collection, storage, and distribution of information, especially about employment and economic resources of the Bay Region. Santa Clara County has already developed a major information system, known as LOGIC for use in its governmental operations. The City of Oakland, using funds provided by a federal grant, has developed a planning information system. The Pacific Telephone Company is currently proposing an information system dealing with land use in which they hope to interest local and regional agencies as participants. On the State level, there have been several proposals for the development of land use information systems. The most recent of these, the California Regional Land Use Information system, is under consideration by the State Officer of Planning.

The proliferation of independent systems poses important problems of coordination in order that they may be consistent with each other and that unnecessary duplication of effort be avoided. At this time, two voluntary committees are in existence composed of representatives of various City and County governments in the Bay Area. The older of these is a committee sponsored by the Association of Bay Area Governments and is known as the Bay Area Automated Information Systems Coordinating Committee. More recently formed, principally under the auspices of Santa Clara County is the Bay Area Property Systems Committee. These are, as noted, voluntary committees and their principal purpose has been to meet and discuss various systems developments and to make recommendations about the best means of coordinating the individual and regional efforts. However, their recommendations are in no way

binding, and one of the major difficulties encountered in the committees is the lack of adequate staff support to do the research necessary to insure compatible and consistent development of each of the individual systems.

This problem of regional coordination is one that must be taken into account if effective interchange of information between public and private agencies and among the cities and counties of the Bay Area, is to occur. It is a matter that transcends the boundaries of individual jurisdictions and interests, and is sometimes apt to be slighted when the very real local problems of systems development are being dealt with. Ultimately, however, there is no question that this issue must be faced if the various jurisdictions of the Bay Area wish to avoid the "Balkanization" of information systems and the real difficulties this will pose for the future exchange of useful information.

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF CITY PLANNING

COMMISSION

| | |
|------------------------------|---------------------------------|
| William M. Brinton | President |
| Mrs. Charles B. Porter | Vice President |
| Mortimer Fleishhacker, Jr. | |
| James S. Kearney | |
| Walter S. Newman | |
| Thomas J. Mellon | Chief Administrative |
| Alternate: Virgil L. Elliott | Director of Finance and Records |
| James K. Carr | Manager of Utilities |
| Alternate: Walter W. Wight | Head Accountant, Airport |

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|-------------------|--------------------------------------------|
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| Edward I. Murphy | Assistant Director - Operations |
| Dean L. Macris | Assistant Director - Plans and Programs |
| R. Spencer Steele | Assistant Director - Implementation |
| Lynn E. Pio | Administrative Secretary |

This report was written by Mr. Maurice Groat, Planner IV, with the assistance of Mrs. Judith Gaffin, Planner II, and Mr. Raymond Laird, Planner II. The typing of the report and the Appendix were done by Miss Loretta Omania, Miss Lenora Lee, and Mrs. Bernice Schnier.

THE CITY OF NEW YORK
OFFICE OF THE COMMISSIONER OF THE DEPARTMENT OF HEALTH

REPORT

Commissioner of the Department of Health
City of New York

Report of the
Commissioner of the Department of Health
City of New York

1911

Commissioner of the Department of Health
City of New York

THE COMMISSIONER OF THE DEPARTMENT OF HEALTH
CITY OF NEW YORK

